

**Notice of Allowability**

Application No.

10/646,098

Examiner

Michelle R. Connelly-Cushwa

Applicant(s)

TULLER ET AL.

Art Unit

2874

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicants RCE and Amendment filed June 5, 2006.
2. ☒ The allowed claim(s) is/are 1,7,8 and 14-16.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

*Michelle R. Connelly-Cushwa*  
MICHELLE CONNELLY-CUSHWA  
PRIMARY EXAMINER  
7/29/06

## **DETAILED ACTION**

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

This application is in condition for allowance except for the presence of claims 3-5 and 11-13 directed to species non-elected without traverse.

Accordingly, claims 3-5 and 11-13 have been cancelled.

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 5, 2006 has been entered.

### ***Response to Amendment***

Applicant's Amendment filed June 5, 2006 has been fully considered and entered.

### ***Response to Arguments***

Applicant's arguments, see pages 4-9, filed June 5, 2006, with respect to claims 1, 7, 8 and 14-16 have been fully considered and are persuasive. The rejections of claims 1, 7, 8 and 14-16 set forth in the Office action mailed December 5, 2005 have been withdrawn.

Applicants have stated that "in summary, Applicants do not claim to have invented the stabilization of barium titanate by the use of zirconium. Applicants, however, have made the surprising discovery that modified barium titanate including zirconium ( $\text{BaZrO}_3$ ) is useful in optical devices." (see the last paragraph on page 8 of the Response filed June 5, 2006)

The prior art relied upon in the prior Office action does not disclose or suggest an optical structure comprising the combination of an Si or SOI substrate, an optical buffer layer as set forth in the amended claims, and a modified barium titanate thin film including 2 to 20 mol% of Zr( $\text{BaZrO}_3$ ), as required by each of claims 1 and 15.

***Allowable Subject Matter***

**Claims 1, 7, 8 and 14-16 are allowed.**

The following is an examiner's statement of reasons for allowance: After an updated search, the most relevant prior art known is the art cited on the PTO-892 attached to the Office action mailed June 6, 2005 and on the Information Disclosure Statement submitted by Applicant. However, claims 1, 7, 8 and 15-16 distinguish over the prior art of record because none of the references either alone or in combination disclose or render obvious the unique combination of limitations set forth in each of independent claims 1 and 15.

Regarding claims 1, 7 and 8; none of the prior art of record discloses or reasonably suggests an optical structure, as defined in claim 1, comprising a modified barium titanate thin film, which comprises barium titanate including 2 to 20 mol% of Zr ( $\text{BaZrO}_3$ ), deposited on the surface substrate, which comprises Si or SOI, and an optical buffer layer having a refractive index lower than a refractive index of the modified barium titanate, the optical buffer layer suitable for confining an optical signal in the modified barium titanate thin film by optically isolating the modified barium titanate film from the substrate. Claims 7 and 8 depend from claim 1.

Regarding claims 14-16; none of the prior art of record discloses or reasonably suggests a method of forming an optical structure, as defined in claim 15, comprising depositing a modified barium titanate thin film, which comprises barium titanate including 2 to 20 mol% of Zr ( $\text{BaZrO}_3$ ), on the surface of a substrate, which comprises Si or SOI and an optical buffer layer having a refractive index lower than a refractive index of the modified barium titanate, the optical buffer layer suitable for confining an optical signal in the modified barium titanate thin film by optically isolating the modified barium titanate film from the substrate. Claims 14 and 16 depend from claim 15.

Hence, there is no reason or motivation for one of ordinary skill in the art to use the prior art of record to make the invention of claims 1, 7, 8 and 14-16.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

**Conclusion**

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

  
Michelle R. Connelly-Cushwa  
Patent Examiner  
July 20, 2006